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26530 7590 06/01/2010

LADAS & PARRY LLP
224 SOUTH MICHIGAN AVENUE
SUITE 1600
CHICAGO, IL 60604

EXAMINER	
ANWAR, MOHAMMAD S	
ART UNIT	PAPER NUMBER
2463	

DATE MAILED: 06/01/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,522	11/14/2006	Congqi Li	CU-5003 RJS	9478

TITLE OF INVENTION: METHOD AND DEVICE FOR IMPLEMENTING OCH-SPRING IN WAVELENGTH DIVISION MULTIPLEXING SYSTEMS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	09/01/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26530 7590 06/01/2010

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224 SOUTH MICHIGAN AVENUE
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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

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10/589,522	11/14/2006	Congqi Li	CU-5003 RJS	9478

TITLE OF INVENTION: METHOD AND DEVICE FOR IMPLEMENTING OCH-SPRING IN WAVELENGTH DIVISION MULTIPLEXING SYSTEMS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	09/01/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
ANWAR, MOHAMMAD S	2463	370-222000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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ANWAR, MOHAMMAD S	
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DATE MAILED: 06/01/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 383 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 383 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	10/589,522	LI, CONGQI	
	Examiner	Art Unit	
	MOHAMMAD ANWAR	2463	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *1/29/10*.

2. ☒ The allowed claim(s) is/are *1,3-5,7-9,13-21 and 23 renumbered 1-19*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/MOHAMMAD ANWAR/	/Derrick W Ferris/
Examiner, Art Unit 2463	Supervisory Patent Examiner, Art Unit 2463

DETAILED ACTION

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. William Park on 4/30/10.

Amendments:

The application has been amended as follows:

Claim 1:

(Currently amended) A connection switching device for implementing Optical Channel Shared Protection Ring (Och-SPRing), used in a node of an optical network system with a working path and a backup path, comprising:

a first switch and a second switch, each of the first switch and the second switch has two unidirectional input ports and one unidirectional output port, and one of the input ports of the first switch is connected to the output port of the first switch under the control of the first switch, one of the input ports of the second switch is connected to the output port of the second switch Under control of the second switch;

wherein one input port of the first switch connects to and receives downlink service signals from a downlink direction of the working path, the other input port of the first switch connects to and receives the downlink service signals from a downlink direction

of the backup path, and the output port of the first switch connects and outputs the downlink service signals to a local drop path;

one input port of the second switch connects to and receives uplink service signals from a local add path, the other input port of the second switch connects to and receives the downlink service signals from the downlink direction of the backup path and the output port of the second switch connects to an uplink direction of the backup path; and

the local add path is connected with an uplink direction of the working path at the same time.

wherein under normal modes of the connection switching device, the input port, which connects to the downlink direction of the working path, of the first switch, is connected to the output port of the first switch; under local drop modes, the input port, which connects to the downlink direction of the backup path, of the first switch, is connected to the output port of the first switch; under local add modes, the input port, which connects to the local add path, of the second switch, is connected to the output port of the second switch; and under express modes, the input port, which connects to the downlink direction of the backup path, of the second switch, is connected to the output port of the second switch.

Claim 2: Cancelled

Claim 3. (Previously presented) The connection switching device according to claim 1, wherein the first switch and the second switch of the device can be one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 4. (Currently amended) The connection switching device according to claim 1, wherein the first switch and the second switch of the device can be one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 5. (Currently amended) A connection switching device for implementing Optical .Channel Shared Protection Ring (Och-SPRing), applied in unidirectional service drop function of a node in an optical network system with a working path and a backup path, comprising: a first switch, which has two unidirectional input ports and one unidirectional output port, and one of the input ports of the first switch is connected to the output port of the first switch under control of the first switch; one input port of the first switch connects to and receives downlink service signals from a downlink direction of the working path, the other input port of the first switch connects to and receives the downlink service signals from a downlink direction of the backup path, and the output port of the first switch connects and outputs the downlink services Signals to a local drop path; and a second switch, which has one unidirectional input port and one

unidirectional output port, and the input port of the second switch is open or close to the output port under the control of the second switch; the input port of the second switch connects to and receives the downlink service signals from the downlink direction of the backup path, the output port of the second switch connects and outputs the downlink service signals to an uplink direction of the backup path.

wherein under normal modes of the connection switching device, the input port, which connects to the downlink direction of the working path, of the first switch, is connected to the output port of the first switch; under local add modes, the input port, which connects to the downlink direction of the backup path, of the first switch, is connected to the output port of the first switch; and under express modes, the input port of the second switch, is connected to the output port of the second switch.

Claim 6: Cancelled

Claim 7. (Previously presented) The connection switching device according to claim 5, wherein the first switch and the second switch of the connection switching device can be one of the three available combinations: both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 8. (Currently amended) The connection switching device according to claim 5, wherein the first switch and the second switch of the connection switching device can be one of the three available combinations: both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation

Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 9. (Currently amended) A connection switching device for implementing Optical Channel Shared Protection Ring (Och-SPRing), applied in unidirectional service add function of a node in an optical network system with a working path and a backup path, comprising: a switch, which has two unidirectional input ports and one unidirectional output port, and one of the input ports is connected to the output port under the control of the switch; one input port of the switch connects to and receives uplink service signals from a local add path, the other input port of the switch connects to and receives downlink service signals from a downlink direction of the backup path, and the output port of the switch connects and outputs the downlink service signals or the uplink service signals to an uplink direction of the backup path, and the local add path is connected to an uplink direction of the working path at the same time. wherein: under local add modes, the input port, which connects to the local add path, of the switch, is connected to the output port of the switch; and under express modes, the input port, which connects to the downlink direction of the backup path, of the switch, is connected to the output port of the switch.

Claim 10: Cancelled

Claim 11: (Previously presented) The connection switching device according to claim 9, wherein: the switch is any one of an optical switch, an electric switch, and a logical switch.

Claim 12. (Currently amended) The connection switching device according to claim 9, wherein the switch is any one of an optical switch, an electric switch, and a logical switch.

Claim 13. (Previously presented) An optical network system for implementing Optical Channel Shared Protection Ring (Och-SPRing), comprising a bi-directional working path and a bi-directional backup path, wherein:

a bi-directional service transmission-reception node in the system comprises two identical connection switching devices, respectively connect with the working path and the backup path in one direction, and each of the connection switching devices comprises: a first switch and a second switch, each of the first switch and the second switch has two unidirectional input ports and one unidirectional output port, and one of the input ports of the first switch is connected to the output port of the first switch under the control of the first switch, one of the input ports of the second switch is connected to the output port of the second switch under control of the second switch; one input port of the first switch connects to and receives downlink service signals from a downlink direction of the working path, the other input port of the first switch connects to and receives the downlink service signals from a downlink direction of the backup path, and the output port of the first switch connects and outputs the downlink service signals to a local drop path; one input port of the second switch connects to and receives uplink service signals from a local add path, the other input port of the second switch connects to and receives the downlink service signals from the downlink direction of the backup path and the output port of the second switch connects and outputs the uplink service

signals or the downlink service signals to an uplink direction of the backup path; the local add path is connected with an uplink direction of the working path at the same time; an unidirectional service transmission-reception node in the system comprises one connection switching device used for unidirectional service drop, and one connection switching device used for unidirectional service add;

the connection switching device used for unidirectional service drop comprises: a first switch, which has two unidirectional input ports and one unidirectional output port, and one of the input ports is connected to the output port under the control of the first switch; one input port of the first switch connects to and receives downlink service signals from the downlink direction of the working path, the other input port of the first switch connects to and receives the downlink service signals from the downlink direction of the backup path, and the output port of the first switch connects and output the downlink service signals to the local drop path; a second switch, which has one unidirectional input port and one unidirectional output port, and the input port of the second switch is open or close to the output port of the second switch under the control of the second switch; the input port of the second switch connects to and receives the downlink service signals from the downlink direction of the backup path, the output port of the second switch connects and outputs the downlink service signals to the uplink direction of the backup path; and

the connection switching device used for unidirectional service add comprises:

one switch, which has two unidirectional input ports and one unidirectional output port, and one of the input ports is connected to the output port under the control of the switch;

one input port of the switch connects to and receives the uplink service signals from the local add path, the other input port connects to and receives the downlink service signals from the downlink direction of the backup path, and the output port connects and outputs the uplink service signals or the downlink service signals to the uplink direction of the backup path; the local add path is connected to the uplink direction of the working path at the same time.

Claim 14. (Previously presented) The optical network system according to claim 13, wherein as to the connection switching device in the bi-directional service transmission-reception node in the system, under normal modes, the input port, which connects to the downlink direction of the working path, of the first switch, is connected to the output port of the first switch; under local drop modes, the input port, which connects to the downlink direction of the backup path, of the first switch, is connected to the output port of the first switch; under local add modes, the input port, which connects to the local add path, of the second switch, is connected to the output port of the second switch; under express modes, the input port, which connects to the downlink direction of the backup path, of the second switch, is connected to the output port of the second switch;

as to the connection switching device applied in unidirectional service drop in the unidirectional service transmission-reception node in the system, under the normal modes, the input port, which connects to the downlink direction of the working path, of the first switch, is connected to the output port of the first switch; under the local add modes, the input port, which connects to the downlink direction of the backup path, of the first switch, is connected to the output port of the first switch; under the express

modes, the input port of the second switch, is connected to the output port of the second switch; and

as to the connection switching device applied in unidirectional service add in an unidirectional service transmission-reception node in the system, under the local add modes, the input port, which connects to the local add path, of the switch, is connected to the output port of the switch; under the express modes, the input port, which connects to the downlink direction of the backup path, of the switch, is connected to the output port of the switch.

Claim 15. (Previously presented) The optical network system according to claim 13, wherein the node of the system further comprises: a first Optical Add Drop Multiplexing (OADM) unit, an input port of the first OADM unit connects with a transmission optical fiber in the optical network system, and is used for dividing optical signals input through the optical fiber according to their wavelengths, and then transmitting the signals to the working path and the backup path; and

a second OADM unit, an output port of the second OADM unit connects with the transmission optical fiber in the optical network system, and is used for combining path, and then transmitting the signals to the transmission optical fiber.

16. (Previously presented) The optical network system according to claim 15, wherein the two OADM units, which connect the same optical fiber in the system, are further directly connected with each other through a transmission path, which is used for express processing on the optical signals which have no interactions with the node.

17. (Previously presented) The optical network system according to claim 13, wherein the first switch and the second switch of the connection switching device is one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 18. (Previously presented) The optical network system according to claim 14, wherein the first switch and the second switch of the connection switching device is one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

Claim 19. (Previously presented) The optical network system according to claim 15, wherein the first switch and the second switch of the connection switch device is one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

20. (Previously presented) The optical network system according to claim 16, wherein the first switch and the second switch of the connection switching device is one of the three available combinations:

both of the first and the second switches are optical switches; and, the first switch is an electric switch in an Optical Transformation Unit (OTU), and the second switch is an optical switch; and, the first switch is a logical switch, and the second switch is an optical switch.

21. (Currently amended) A method for implementing Optical Channel Shared Protection Ring (Och-SPRing), applied to an optical network system with a working path and a backup path, comprising:

controlling a first switch to receive downlink service signals from the working path or the backup path-when receiving the signals, wherein the first switch has two unidirectional input ports and one unidirectional output port, one input port of the first switch connects to and receives the downlink service signals from a downlink direction of the working path, the other input port of the first switch connects to and receives the downlink service signals from a downlink direction of the backup path, and the output port of the first switch connects and outputs the downlink service signals to a local drop path;

transmitting uplink service signals received from a local device respectively to an uplink direction of the working path and one of two input ports of a second switch when transmitting the signals, wherein the second switch has two unidirectional input ports and one unidirectional output port, one input port of the second switch connects to and

receives the uplink service signals from a local add path, the other input port of the second switch connects to and receives the downlink service signals from the downlink direction of the backup path and the output port of the second switch connects to the uplink direction of the backup path; the local add path is connected with the uplink direction of the working path at the same time; and controlling the second switch to choose the uplink service signals or the downlink service signals, and output the selected signals to an uplink direction of the backup path. wherein under normal modes, the input port, which connects to the downlink direction of the working path, is connected to the output port of the first switch, under the control of the first switch; the signals from the downlink direction of the backup path are input to the local drop path through the first switch; the signals from the local add path are directly input to the uplink direction of the working path;

if the node needs to enter local drop modes, the input port, which connects to the downlink direction of the backup path, is connected to the output port of the first switch, under the control of the first switch; the signals from the downlink direction of the backup path are input to the local drop path through the first switch;

if the node needs to enter local add modes, the input port, which connects to the local add path, is connected to the output port of the second switch, under the control of the second switch; the signals from the local add path are input to the uplink direction of the backup path through the second switch;

if the node needs to enter express modes, the input port, which connects to the downlink direction of the backup path, is connected to the output port of the second

switch, under the control of the second switch; the signals from the uplink direction of the backup path are input to the downlink direction of the backup path through the second switch.

Claim 22: Cancelled

Claim 23. (Currently amended) The method according to claim 21, further comprising: controlling the second switch to open the input port, which connects to the local add path, to the output port under the normal working modes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD ANWAR whose telephone number is (571)270-5641. The examiner can normally be reached on Monday-Thursday, 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on 571-272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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